

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOYDSTUN EQUIPMENT MANUFACTURING, LLC,

Boydstun,

v.

COTTRELL, INC.,

Patent Owner.

Case IPR2017-00962

Patent 7,585,140 B1

**DECLARATION OF DR. KIRSTEN M. CARR
IN SUPPORT OF PATENT OWNER'S OPPOSITION
TO PETITION FOR *INTER PARTES* REVIEW**

I, Kirsten Carr, of Ann Arbor, Michigan, declare that:

1. I have attached my curriculum vitae as **Exhibit A** to this report. I have summarized my educational and professional background below.
2. I received my B.S. degree in Mechanical Engineering from the University of Michigan, Ann Arbor, in 1987 and my M.S. and Ph.D. in Mechanical Engineering from the University of Illinois, Urbana, in 1990 and 1995, respectively.
3. I worked as a mechanical engineer at Ford Motor Company for over 14 years from 1992 to 2006. During my time at Ford I held a variety of engineering and managerial positions spanning many areas of automotive development, including manufacturing research, powertrain quality, occupant safety research, and advance safety sensors.
4. I joined Packer Engineering in 2006 as an expert in mechanical and manufacturing engineering with expertise in forensic analysis of mechanical components, vehicular accidents, industrial equipment, vehicle safety restraint and seat systems, and electromechanical systems. I was responsible for managing and performing mechanical and manufacturing engineering investigations and analyses for legal, insurance, and industrial firms.
5. I created Carr Analysis, LLC in 2011, where I am the President and Principal Consultant and continue my consulting work.
6. I have been awarded ten automotive patents.

7. My other achievements and qualifications, including publications, presentations, reports, and lectures, are listed on my curriculum vitae.

8. I am a professional engineer registered in the State of Michigan.

9. In writing this Declaration, I have considered the following factors: my knowledge and experience gained from 30 years as a mechanical engineer, my experience working with other mechanical and automotive engineers, the materials cited in my declaration, U.S. Patent No. 7,585,140 B1 (“the ‘140 Patent”, Ex. 1001) and its accompanying prosecution history (Ex. 2004), U.S. Patent No. 2006/0013667 A1 (“*Ruan*”, Ex. 1003), U.S. Patent No. 5,314,275 (“*Cottrell ‘275*”, Ex. 1004), and U.S. Patent No. 6,824,121 B2 (“*Boice*”, Ex. 1005), and U.S. Patent No. 5,101,537 (“*Cummings*,” Ex. 2005). I also understand that Patent Owner is filing a contingent motion to amend, and I have reviewed substitute claims 9-16, submitted as Appendix A to that filing.

10. I also reviewed Boydstun’s IPR Petition (“*Boydstun*”), the declaration provided by Mr. Clark (“*Declaration*”), the transcript of Mr. Clark’s deposition (“*Deposition*”), and the Board’s Institution Decision.

11. Although for the sake of brevity this Declaration refers to selected portions of the cited references, it should be understood that one of ordinary skill in the art would view the references cited herein in their entirety, and in combination with other references cited herein or cited within the references themselves. The

references used in this Declaration, therefore, should be viewed as being incorporated in their entirety.

12. I am not currently and have not at any time in the past been an employee of Cottrell, Inc. I have been engaged in the present matter to provide my independent analysis of the issues raised in the petition for inter partes review of the '140 Patent. I received no compensation for this declaration beyond my normal hourly compensation based on my time actually spent studying the matter, and I will not receive any added compensation based on the outcome of this inter partes review of the '140 Patent.

Person of Ordinary Skill in the Art

13. I understand that the '140 patent is to be read from the perspective of those working in the pertinent art at the time of the invention. I have been instructed for the purposes of this analysis to assume that the time of the invention for the '140 patent is March 27, 2008, the application filing date reported on the '140 patent. I understand this is called the "Critical Date."

14. I am familiar with the content of the '140 Patent. Additionally, I have reviewed the other references cited above in this declaration. Counsel has informed me that I should consider these materials through the lens of one of ordinary skill in the art related to the '140 Patent at the time of the invention.

15. I believe one of ordinary skill around the Critical Date would have had at least a Bachelor of Science in Mechanical Engineering or another comparable technical degree. Alternatively, this individual could have developed skill in mechanical devices through a number of years of experience working on the design and manufacturing of mechanical devices. Individuals with additional education or additional industrial experience could still be of ordinary skill in the art if that additional aspect compensates for a deficit in one of the other aspects of the requirements stated above. This opinion is based on my own personal experience, including my knowledge of students, colleagues, and related professionals in the art of the patent around the time of the Critical Date.

16. My findings, as explained below, are based on my education, experience, and background over the last 30 years as discussed above.

The '140 Patent

17. The '140 Patent teaches a ratcheting tie-down apparatus and system for automobile and cargo transport.

18. The '140 Patent explains how conventional transport trailer tie-down systems were used to restrain a vehicle with “straps arranged around each wheel of the vehicle” and “placed in tension to prevent movement.” ('140 Patent, Fig. 2, 1:16-21). According to the patent, each wheel location had a tie-down system integrated into the structure of the transport trailer. (Id, Fig. 2) Many types of locking

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